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THE SCHOOL REVIEW

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THE HIGH SCHOOL OF TOMORROW¹

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- 1. The American high school is a young giant, now passing rapidly through his years of early adolescence. What will he be like, say in the year 1925, when, one may expect, he shall have attained his majority? In what essential respects will he differ from the youth of today who has not yet found himself, in spite of his great physical size, who is still closely tied to his mother's apron strings (for in a way, the college has mothered him), and who, notwithstanding his occasional freakishness, is still bound largely by the customs and superstitions of the youth reared in the atmosphere of mediaevalism?
- 2. In forecasting possible developments of secondary schools, let us keep in mind chiefly the urban or suburban community. The country high school like its prototype, the country elementary school, is unavoidably for the present, the Cinderella of the secondary-school sisterhood. We all hope that the prince bearing gifts will sometime find the rural high school, but for the present we cannot even be certain that he is on the quest. During the next decade it is clearly in those communities where many people live not too far from each other that we may expect experimental

¹ Notes of an address delivered by Professor David Snedden of Teachers College, Columbia University, New York, to the Central Association of Science and Mathematics Teachers, Chicago, December 1, 1916.

changes in secondary education to be launched, and permanent modifications to become established. At the risk of seeming unjustifiably dogmatic, let us hazard guesses as to what some of these will be.

- 3. The high school of today (as we personify it) thinks of its responsibilities chiefly in connection with the best fourth or best third of the children of the community who have completed the eight-year elementary-school course and who are usually from fourteen to eighteen years of age. But, beginning with the segregation of children from twelve to fourteen years of age into the junior high school, we shall probably bring within the general scope of secondary education all schooling suited to youths from twelve to eighteen years of age, whether general or special, liberal or vocational. There is, in reality, little to distinguish secondary from elementary education in purpose or kind—the differences are chiefly in degree only. Most of the distinctions between elementary and secondary education which we try to incorporate into educational theory are factitious and unhelpful. In the secondary school of 1925 we shall doubtless be teaching some children of even fourteen or fifteen years of age the rudiments of reading and writing and number, but, because of their age, we shall minister to their educational needs in special classes in some type of secondary-school class, instead of placing them in lower schools with younger children.
- 4. The high school of today thinks of its certainly attainable purposes chiefly in terms of the mastery of certain forms of highly organized knowledge, and in strict accordance with certain traditional standards as to what constitutes such mastery—capacity for verbal reproduction, performance of definite exercises, etc. It also dreams freely of other purposes not so proximate, and of greater permanent significance—the training of mind, the ennobling of character, the in-breathing or evoking of persistent cultural interests, the kindling of the civic sense and the like. But in large part these dreams now give us only castles in Spain. Like the enterprises of poor Colonel Sellers, the big aspirations which we cherish on behalf of our secondary schools sound well by the fireside or as the subject-matter of after-dinner speeches; but in the cold light of

day they guide us very little in the actual tasks planned or under way in the teaching of Latin, German, English, physics, ancient history, algebra, mechanical drawing, lathe-work, or commercial geography.

- 5. By 1925, it can confidently be hoped, the minds which direct education will have detached from the entanglements of our contemporary civilization a thousand definite educational objectives, the realization of which will have demonstrable worth to society. It will be found that many of these can best be realized through the medium of some type of secondary school or class therein. In defining and giving comparative valuations to these objectives or purposes or goals we shall, of course, take account in due measure of the possible and the desired well-being of the individual as well as of the society of which he is a member; of the native powers, interests, and probable future opportunities of the learner; and of the by-education resulting from, or to be procured through, such social non-school agencies as the home, the church, the workshop, community contact, and the like.
- 6. Educational objectives worthy of a place in publicly supported secondary schools will have been found to be of many kinds. Some of these will center chiefly in the promotion of physical well-being—to be realized through the establishment of right ideals of health, strength, and endurance; the imparting of needed instruction in hygiene and sanitation; and the training in habits of posture, activity, and restraint. We get glimpses of the possibilities in this direction even now, but they are only glimpses. What is the significance to the educational programs of the future of the results on physique and health of the forced training and the exposure endured by the millions of recruits in the present war? How far are we yet from a realization of the cost to the physical womanhood of this country of our specialized nerve and brain drill in schools?
- 7. Again, some of our objectives will center definitely in cultivation of specific personal intellectual and aesthetic interests—the resources wherewith we enrich our leisure time, our individual lives. In view of their ostensible aims, the high schools of the present should be doing more along this line than is now actually the case.

They should at least establish abiding cultural interest—appreciations, tastes, enthusiasms, even hobbies—in literature, science, foreign languages, and history. Surely the high school of 1925 will be doing this? Surely it will take the necessary means to insure that all those who have felt its influence will somewhere in the world's multifarious cultural possibilities find *leads* which may grow into vital personal interests of a high order, give rise to avocational activities, and entitle the possessor to rank with cultivated men in some field. In music, literature, social science, natural science, history, travel in foreign lands, the practical arts suited to the amateur handicraftsman, politics, drama, the moving picture—in most, if not all, of these directions we may expect the school to offer openings to be made available to each learner according to his leanings, his capacity, and his possibilities of largest self-development.

8. A third class of objectives will be evolved in connection with the direct and purposive development of young people toward the standards of civic habit, knowledge, ideal, and the resulting behavior which befits the member of the social group, the citizen of the state in the twentieth century. Call this form of education moral, civic, ethical, humane, religious, social—in greater or less degree, it is each and all of these—it is certain that in the complicated social life of the age upon which we have already entered we must have it in ever greater measure if we are to survive. It must include the formation of certain fine social habits and attitudes which the by-education of agencies other than the school has not given; it must include the giving of much of the social knowledge which is necessary to guide us aright in the jungle of modern social life; and it must be strong in the cultivation of a variety of right sentiments and ideals. But it must do much more than train (in the specific sense), inform, and inspire; it must provide for action, for achievement, for social control, for government, for social work, within the reasonable capacities of the adolescent learner. activities of the Boy Scouts, of youthful camping parties, of voluntary organizations and self-governing groups in schools now suggest some of the possibilities in this direction. But we shall have to multiply new openings. Here must begin the service activities for political participation, for defense, for business co-operation, for accumulation and use of capital, for the reform of anti-social individuals, for the co-operative support of the handicapped, and for the pioneering of new constructive effort. We can take for granted the disposition of all adolescents to become good and approved and progressive members of society, but we must kindle to the utmost the motives and vitalize the sanctions that, for these younger people, give depth and reality to their social education. We shall find it practicable and desirable to make more of appeal to the spirit of fair play, to the sense of personal loyalty, to the jealousy of personal honor, to the desire for success, to the altruistic, and to the religious sentiments than we have been doing heretofore, and we shall learn how to do it in each case without provoking self-consciousness and opposition, or permitting indifference and "slacking." The high school of 1925 will have learned how to give "backbone" to moral and social education, as, in some degree, the Y.M.C.A., the boys' clubs, the Boy Scout leaders, and the conductors of camps have already done. But it will find also that many of the best results of social education are to be developed, not in the shape of specific habits, definite knowledge, and vigorous activities, but rather as kindled appreciations, refined sentiments, and uplifted ideals. For all this, pedagogical methods have yet largely to be devised.

9. Finally, we must expect that opportunities for vocational education in endless variety will evolve under, or in connection with, the secondary schools of 1925. Until the economic and domestic basis of our present civilization changes radically it will be inevitable that the majority of our boys and girls will desire and will be obliged by circumstances to enter upon self-supporting work somewhere between the ages of fifteen and eighteen. For many of these it will be found that specific vocational schools designed to give, or, at any rate, to supervise their initial vocational education will be of the utmost importance. Some stages of habituation and of experience looking to direction (foremanship) may well be left to the by-education of shop, office, and farm. The exact relation of the vocational school to the school of general or liberal education cannot now be foreseen, but in all probability it will somewhat

resemble the relation of the college of vocational education to the liberal arts college in the American university. Certainly these vocational schools, whether making "full-time" offerings (that is, undertaking all three phases of vocational education—practical participation, related technical study, and general studies related to the vocation) or only "part-time" offerings (evening schools, continuation schools, etc., supplementing the learning acquired in the commercial pursuit of a vocation), will be closely linked up with the occupational fields for which preparation or further training is being given. If these occupations are found in productive industries occupying partially segregated districts, then, doubtless, the full-time vocational schools will also be located in these districts.

Probably vocational education and general education (including under the latter physical, social, and cultural) will not be blended or fused in the efficient secondary schools of 1925, as seems to be the case now in certain quasi-vocational schools ostensibly making offerings of vocational instruction or training as elements in a modified scheme of general education (actually they give only "denatured" vocational education). All signs point to the conclusion that in 1925 the person learning a vocation in a school will organize his time and expend his energy much as does now the approved employee in home, shop, or office, or on the farm, on the road, or on shipboard—he will give from seven to ten hours of "the heart of the day" to his vocational pursuit (practice and learning) and his remaining waking hours (and holidays) to recreation, the furthering of personal culture, and the discharge of his civic and other social responsibilities.

10. In addition to definition of purposes the high school of 1925 will surely have made great advances over present practice as regards the definition of effective methods of instruction and training. For this purpose it will be essential to distinguish kinds and qualities of useful learning and to apply the distinctions thus made to the varied departments of human activity which we wish to improve or otherwise modify through our schooling.

For example, is it not desirable that pupil and teacher should know quite definitely and be in agreement as to when learning should result in well-assimilated knowledge, capable of instant application in the course of life's practical activities? Without doubt secondary education today lacks a certain vertebral quality, a kind of hardness and firmness. Its results are vague, its graduates intellectually flabby to a degree that disturbs us. But, certainly, the way out of this difficulty is not that of simply making all studies hard, of setting more rigorous examinations, of "firing" weaker pupils, or of appealing to the sense of fear and the methods of "driving" generally.

As in all other fields of activity where high standards prevail, education must learn to discriminate the quality of the means which it employs to attain ends. We need "vertebrate" quality in secondary education, but we need much besides. Liberal education can better be defined in terms of appreciation, interest, or capacity for wise choice than in terms of power to execute, or to apply knowledge definitely. What are the pedagogic means of producing appreciation, taste, or interest over wide areas? We have much to learn here.

11. The high school of 1925 will probably be much more effective than is the high school of 1916 in training the mental powers of its pupils. For one thing, it will doubtless teach the pupils themselves something of mental science—at least to the extent of enabling them to appreciate the importance of keeping the complicated machinery of the nervous system in good running order, and the large possibilities of so training the powers of the mind that optimum efficiency shall be the outcome.

Quite certainly, however, the high school of 1925 will not be, as is the high school of the present, the victim of the quackeries, the cure-alls, the "luck stones," that came into vogue in the ages of educational faith. In the dark ages of medicine it was widely taught and believed that some nauseous drugs, some awful concoctions of dead or diseased organic matter, were the indispensable cures for human ailments. In somewhat the same way the modern educational exemplars of the mediaeval healer insist that some nauseous and unnatural studies, largely made up of dead matter, must be employed for the educational salvation of the young.

For all practical purposes the future high school will insist upon the fullest mental training as a necessary feature and expected by-product in connection with the pursuit of objectives otherwise worth while also. Conceivably, provision will be made for mental gymnastics, for "corrective" work, for very specific training on occasions when the need of that shall be apparent. But this will be something so different from our present unintelligent reliance upon algebra and Latin as chosen panaceas for the undisciplined mind that any comparison would be out of the question.

12. Will anything like uniform programs of instruction and training for large number of pupils be found in the high schools of the future except in the case of particular groups of studies and forms of practice designed to produce vocational efficiency in a given field? It is doubtful. The field of human culture is so large, its valuable prospects so many, that each learner, under wise guidance, will usually make his individual program, subject, of course, as in the modern university, to the administrative limitations of the institution to make many and varied offerings.

Hence, we may be certain that the large, rich, secondary schools of 1925, holding forth opportunities suited to all children from twelve to eighteen years of age, will offer a wide range of activities, some of the "hard-work" order, some of the "high-grade play" order, and that no pupil will be debarred from making his own program except for weighty reasons, the burden of establishing the validity of which will rest upon the school. But it will be assumed that the guardians of the pupils, as well as the pupils themselves, are disposed to do the things educationally that will prove most profitable to them, and that advisory agencies will be found in the school to indicate what lines of study, of personal training, and of culture will prove most worth while. We may hope that the doctrine of the innate depravity of secondary-school students, as well as the doctrine of the incorrigible imbecility of their parents, will have been rendered innocuous, if not obsolete.

13. A special word is due as to the probable place of science and mathematics in the high schools of 1925.

First, while absolute prescriptions will be rare, it will generally be expected that all students will give some time to reading, amateur experimentation, and field study, in a sufficient variety of fields of science to beget in them wide and generous appreciation of the part played by science in modern life. All the work offered with this end in view will be of the "beta" type. It is to be hoped that students of educational psychology will have discovered satisfactory means (organized materials, reading-matter, opportunities for experimental work) and methods to make learning of this kind count toward liberal education when given under school auspices. At present many of our pupils are left to the chances of general reading, the moving pictures, and personal associations to obtain an appreciative contact with the inspiring aspects of modern scientific achievement.

For the present we should devote our best efforts to the organization of a course—very flexible and very alluring—in general science for youths from twelve to fifteen years of age. One hopes that a similar course in mathematics could be evolved, but, with the traditions of that subject crystallized as they now are, the situation seems hopeless. Certainly, from the point of view of any sound theory of *liberal* education the thing is possible and most highly desirable.

Some branches of science and of mathematics offered as "alpha" units will, in the future high school, be designed primarily to serve as prevocational studies; that is, students anticipating entry upon certain mathematics- or science-using vocations will deliberately seek, as preliminary thereto, equipment in the shape of ability to use these subjects as instruments. Probably adherence to this primary aim will result in great modifications of these subjects from the pedagogic forms in which they now appear, and tribute must be paid to the large amounts of experimental and genuinely constructive work done in this direction by school men in and around Chicago.

Then, of course, some mathematics and some science, always in highly specialized and very directly "applied" forms, will appear in the various vocational schools clustering under the secondaryschool organization of the future.

14. Below is given a long list of the "subjects" divided into alpha ("hard work") and beta ("amateur," "high-grade play") classes, which will possibly be considered by the school authorities of 1925 in determining the offerings which it is feasible for a

A LIST OF POSSIBLE SECONDARY-SCHOOL SUBJECTS FOR A "MODERN" HIGH SCHOOL

	Name of Subject*	Alpha Units	Beta Units
I.	1. English language:		
	2. English grammar	ı	
	3. English written composition	I or 2	
	4. Silent reading	½ or 1	
	5. Voice culture	2 OI I	
	6. Oral reading	ī	
	7. Public speaking	ī	
	8. Rhetoric	I	•••••
	o. General study of English		
			· · · · · · · · · · · · · · · · · · ·
	10. History of English language		I
TT	II. Current usage		I
II.	12. English literature:		
	13. American selections		I
	14. Nineteenth-century English selections		I
	15. Classical English selections		I
	16. Contemporary fiction		1
	17. Contemporary drama and poetry		I
	18. Contemporary general literature		τ
	19. Historical review of English literature	l 	ı
	20. Intensive study of selections	T	
III.	21. Natural science:	-	
	22. General science		I
	23. Astronomy		$\frac{1}{2}$
	24. Geography		1 I
			i ·
	25. Geology		I
	26. Biology and evolution	· · · · · · · · · · · · · · · ·	I
	27. Natural history of man		I
	28. Physics		
	29. Chemistry	I	
	30. Biology	I	
IV.	31. Social science:		į
	32. Community civics	$\frac{1}{2}$ or I	1/2 or 1
	33. Study of nations, historical and contempo-	_	-
	rary	.	I
	34. Essentials of social science, with materials		
	for historical perspective		ı
	35. History, American		I or 2
	36. History, general	1 or 2	1 or 2
	37. School government, practice	1 01 2	1012
	38. Electoral government, national, state and		2
	local, including voting		1
	39. Social ethics		1/2
V.	40. Mental science:		I
٧.			_
	41. General mental science		I
	42. Methods of study	$\frac{1}{2}$	
37 T	3.6 .1		1
VI.	43. Mathematics:		1
VI.	44. General mathematics	1	I
VI.	44. General mathematics	ı	I
VI.	44. General mathematics	1 1	I
VI.	44. General mathematics	1 1	I

^{*}Figures at left refer to explanatory notes at end of section.

A LIST OF POSSIBLE SECONDARY-SCHOOL SUBJECTS FOR A "MODERN" HIGH SCHOOL— Continued

	Name of Subject*	Alpha Units	Beta Units
VII.	49. Classical language and literature:		
	50. Classical language and literature, general		I
	51. Latin in relation to English	1/2	1
	52. Latin language	2	
	53. Greek language		1 :
VIII.	54. Modern language:		
	55. German reading	I OF 2	
	56. French reading		
	57. Spanish reading	I or 2	1
	58. Russian reading	I or 2	
	59. Spoken German		
	60. Spoken French		1
	61. Spoken Spanish		
	62. Prevocational Spanish reading	I	
	63. German literature		I
	64. French literature		ī
IX.	65. Graphic and plastic art:		-
	66. Drawing and Painting, amateur		I or 2
	67. Mechanical drawing	T OF 2	
	68 Illustration amateur	1 01 2	T OF 2
	68. Illustration, amateur		T OF 2
	70 Design prevocational	T	1012
	Art appreciation historical and contempo	1	
	70. Design, prevocational.71. Art appreciation, historical and contemporary.		1 or 2
X.	72. Music:		1012
21.	73. Chorus singing	ı	
	74. Individual vocal	ī	
	75. Individual instrumental		
	76. Band	1	
I.	78. Physical education:		I or 2
1.	70. I hysical education.	Į.	
	79. General hygiene and sanitation		1 01 2
	80. Play, games, field sports		I or 2
VII	82. Rifle team and hiking	. I	
XII.	83. Vocational guidance:		_
	84. General reading-course		I
32TTT	85. Tests for vocations	I	
XIII.	86. Practical arts:	1	
	87. Agricultural arts		I or 2
	88. Industrial arts		I or 2
	89. Commercial arts		I or 2
*****	90. Household arts		1 or 2
XIV.	91. Vocational training:		
	92. Machine metal work, practice (school	,	
	commercial, shop)]
	93. Machine metal work, technical	2 or 4	
	94. Machine metal work, informational		I or 2
	95. Machine metal work, part time in private	9	
	shop	4 or 8	
	96. Machine metal work, technical (school)	$\frac{1}{2}$ or 4	
	97. Machine metal work, general		
	98. Gardening, home farm practice		

A LIST OF POSSIBLE SECONDARY-SCHOOL SUBJECTS FOR A "MODERN"
HIGH SCHOOL—Continued

Name of Subject*	Alpha Units	Beta Units
99. Gardening, technical (school)		1 Or 2
tice)	4 or 8 2 or 4 4 or 8 2 or 4	I OF 2

^{*}Figures at left refer to explanatory notes at end of section.

Note.—Repeat for other vocations, such as: house carpentry, printer, painter, fireman, teamster, electrical worker, weaver, shoemaking specialist, etc.; farmer, stock raiser, farmhand, florist, horticulturist, etc.; stenographer, bookkeeper, field salesman, clerk, file clerk, etc.; wage-earning domestic, "mothers' helper," children's nurse, waitress, etc.

particular school to make. It would be easy to add to or otherwise modify this list according to one's preconception as to things "educationally most worth while." Until we possess a more adequate educational psychology, and especially sociology, we shall, of course, have few satisfactory criteria as to the "worth whileness" of these or any other proposed members of secondary-school curricula.

The measures indicated by the figures in the columns on the right ("Carnegie units") have little validity, of course, and are included merely to suggest the desirability of eventually evaluating all these studies somehow in terms of the amount of time and—it is to be hoped—effort which should properly be given them.

EXPLANATORY NOTES

- r. English language is the term here used to cover all forms of oral and written expression and of apprehension on a technical basis, such as silent reading.
- 2. A technical study, especially of the principles of fundamentally good writing and reading—probably different aspects of the same subject. It may be assumed that the correction of solecisms of speech will be made independently of this study.
 - 3. The subject as ordinarily understood.
- 4. A subject not now developed, but which offers much promise and is capable of having developed a technique of its own.
 - 5. Results to function especially in speech and oral composition.

- 6. A specialty for those desiring effectiveness in this department, either for socially decorative or for practical purposes, e.g., prospective teachers.
- 7. To cover a wide range—speaking to several persons simultaneously or addressing large audiences.
- 8. Like grammar, a formal study of principles for the sake of good writing and reading.
- 9. A systematic general study of elements that enter into the effective use of English. Intended as an alternative for those not electing two or more of the subjects already named.
- 10. Purely an appreciative study, based upon lectures and the reading of choice works.
- 11. An appreciative study based chiefly upon good usage of English by contemporary writers and speakers, bringing out especially their distinguishing qualities.
- 12. To cover all phases of literature in the vernacular. The actual objectives of this study are not yet clearly defined, but our faith in its possibilities is strong. As a matter of fact we shall ultimately classify the objectives of the study of English literature under three heads: (a) informational and historical, (b) for purposes of aesthetic appreciation, and (c) for purposes of socialization and character building.
- 13–19. Appreciative studies in the fields indicated, all elective, with, perhaps, requirement that not less than two shall be taken by every student. Few selections should be prescribed for all pupils alike. Much individuality should be allowed, and teaching is to be largely by way of conferences following readings by pupils.
- 20. Intensive study of one or more selections to obtain mastery of method of analytical study of English literature.
- 21. Objects of natural science teaching should probably be threefold:
 (a) appreciative insight into phenomena of environment, (b) mastery of distinct fields for prevocational purposes and interest in sympathetic study, and (c) scientific method which should be a by-product of all the teaching, it being remembered that scientific method has its appreciative as well as its executive aspects.
- 22-27. Appreciative studies based upon amateur motives of research and doing, and utilizing general reading, lectures, etc.
- 28-30. Systematic studies intended to be prevocational for some and to satisfy the demands of those who desire or on whose behalf—e.g., college admission—is desired rigorous study.
- 31. Social science includes historical studies, but it is assumed that history starts with analysis of social science as based on contemporary life.
- 32. One-half unit of rigorous study of facts, with a view to their application of the results of such study, and one-half unit of appreciative reading, etc.

- 33. An appreciative study.
- 34. Contemporary situations of social science studied, after which careful study of historical antecedents.
- 35-36. Courses resembling those now found, but divided into the two phases.
- 37. The practice of school government by pupils willing to take an active part in official action, leadership, etc.
 - 38. Systematic study in part, appreciative study in part.
 - 39. Appreciative reading.
- 40. A proposed study, undeveloped as yet in secondary education, but of utmost importance.
- 41. An appreciative study of phenomena and their interpretations as far as the pupils can go.
 - 42. Systematic study of methods of effective learning.
- 43. An appreciative study of the part played in modern life by mathematics.
 - 44-48. Studies designed to effect permanent mastery.
- 49. Classical languages and literature. Studied chiefly from the point of view of contributions to liberal education.
- 50. An appreciative study of the place of classical language and literature in history and in the foundations of the English language.
- 51. A study not yet developed, but analogous to word analysis as formerly studied.
- 52-53. Definite language studies, with a view to certain prescribed forms of mastery.
- 54. It is assumed that the objectives to be kept in view will be more clearly defined than is the case at the present time in modern language teaching.
- 55-62. Definite forms of mastery in accordance with pre-established standards.
- 63-64. Appreciative approaches on the basis of forms of literary presentation not yet organized, doubtless using translation chiefly.
 - 65. Chiefly designed to contribute to the ends of liberal education.
 - 66. The amateur and appreciative basis to be emphasized.
 - 67. Prevocational usages contemplated principally.
 - 68-71. Self-explanatory.
 - 72-77. Self-explanatory.
 - 78-80. Quantity might be prescribed, but particular forms left optional.
 - 81. Prescribed and routine work required.
- 82. Subject may be elected, but once chosen, definite efficiency should be the outcome.
 - 83-84. Self-explanatory.
- 85. A course of tests for pupils interested in particular vocations might be prescribed, perhaps to be called "prevocational training."

86-90. All of these studies placed on appreciative basis. The method is assumed to be one of intensive sampling and largely based on individual interests. Might be utilized sparingly for vocational guidance.

91–106. A particular trade must be selected, then provision made for practical instruction in it, followed by provision for technical instruction. A distinction is suggested between practical instruction in schoolshop which might occupy, primarily, a period of from one month to two years, followed by transfer of learner to commercial shop where part of time is reserved for continuation school or part-time school attendance.

In the case of any particular occupation a study on the appreciative basis of the more cultural aspects should be provided also.